

IN THE ABSTRACT:

Amendment to page 24.

IN THE DRAWINGS:

No amendment to the drawings.

REMARKS

Reconsideration of this application is requested.

Response to objection to Specification

The Examiner objected to the specification referencing page 9, paragraph 4. The symbol relates to gamma alumina and changes to the application have been made to clarify the specification. The gamma alumina was disclosed in the provisional application as well as the non-provisional application. It is submitted that the specification is now clear.

Response to claim rejections under 35 U.S.C. 112

Claims 1, 15 and 20 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claims 1, 15 and 20 have been amended to make clear that the nuclear material includes one or more of the three recited radioactive materials. It is believed that the claims are clearly definite now with respect to the recitation of the nuclear material.

Claims 1 and 15 were rejected under 35 U.S.C. §112 in the use of the term "adjusting the pH of the nuclear material or any portion thereof to be not less than 5 if required". It is submitted that one of ordinary skill in the art would clearly understand that if the pH is less than 5, then adjustment is necessary, whereas if the pH is more than 5,

adjustment is not necessary. It is submitted that one of ordinary skill in the art would clearly be apprised of the invention.

Claim 20 was rejected as was claims 1 and 15, but has been clarified, and it is believed that claim 20 now clearly recites the contents of the nuclear material being stabilized.

Response to claim rejections under 35 U.S.C. §103

Claims 1-10 and 12-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Wagh et al. U.S. patent no. 5,645,518 in view of the Kreuzmann U.S. patent no. 4,412,861 and the Notari U.S. patent no. 3,416,888.

The Wagh et al. '518 patent relates to a process for stabilizing low level hazardous waste, see column 1, lines 17-26. The present application relates to stabilizing, in the same sense as the Wagh '518 patent, much more hazardous materials including weapons grade materials, see the first paragraph under the Background of the Invention, pages 1 and 2 of the present application. The Kreuzmann '861 patent, contrary to the Examiner's assertion, is not analogous art. The Kreuzmann '861 patent in fact is exactly opposite to the present invention. While the present invention is specifically directed to stabilizing, that is preventing nuclear material from being used by proliferators and terrorists, the Kreuzmann '861 patent is directed to the recovery of uranium from uranium tetrachloride in order to achieve quantitative recovery of uranium in highly pure form, see the Abstract as well as other portions of the '861 patent. Accordingly, the Kreuzmann '861 patent is not analogous art, and in fact, teaches methods that are exactly opposite to the purpose of the

present invention. Simply because two patents identify uranium and/or plutonium or other common chemical elements, does not make them analogous art and the Examiner is simply incorrect in this assumption.

Moreover, combining the processes of Wagh and Kreuzmann to stabilize uranium is not obvious. The resulting MgF_2 is sparsely soluble (its solubility product constant pK_{sp} is 7×10^{-7}). This compound if not stabilized properly in the matrix can leach out easily, particularly in the acidic and alkaline conditions. As Example 1 of this application demonstrates, the materials and processes used in this invention produced a waste form that made it possible to react MgF_2 with the matrix components, or simply microencapsulate sufficiently that it will not leach fluorine. Without practicing the steps of this invention, the desired end result is not possible, and hence, it is not obvious to conduct reaction of uranium fluoride with magnesium oxide and produce waste form that will not leach fluorine.

Similarly, the Examiner cites the Notari '888 patent as being combinable with Wagh and Kreuzmann to render the claims obvious to one of ordinary skill in the art. This too is clearly incorrect. Merely because alumina is taught in a patent which merely teaches how to prepare a spheroidal alumina has a certain physical property does not mean it would be obvious of one of ordinary skill in the art to incorporate that material in treating radioactive material which may include weapons grade material. Alumina reacts with phosphate slurry to form aluminum hydrophosphate, which can react with other metals such as magnesium to form stable compounds. In these reactions it is possible that hydrocarbons can get cross linked and become stable. So this invention goes beyond simple absorption

of hydrocarbons in alumina and allows a chemical stabilization of the hydrocarbons that were absorbed by alumina.

Therefore, the Examiner is simply incorrect in his conclusion, and in fact, has used the applicants' specification as a guideline to combine the prior art. Nowhere is there remotely suggested in any of the three references that it would be obvious to combine them as did the Examiner here. The only suggestion to combine the references as suggested by the Examiner is contained within this application.

For instance, although the Wagh et al. '815 patent is directed to stabilizing low level radioactive material, that is converting radioactive materials into forms which are not useful for weapons, there is no suggestion in the Wagh '815 patent that the invention would be useful for weapons grade materials or for converting fluorides in nuclear material. Moreover, the Wagh '815 patent does not deal with radioactive oils, greases and the like, as taught in the subject application.

Yet another significant difference between the subject invention and any of the prior art is the loading factor. Loading with the present invention can be up to 80% by weight without loss of integrity to the product, see page 9, second paragraph, whereas the best loading obtained in the Wagh '815 patent was 70%. Ten percent is no small factor when dealing with weapons grade materials or other high level radioactive waste as set forth in the present application. The Notari '888 patent cannot be combined with the Wagh patent and the Kreuzmann patent as suggested by the Examiner because nowhere in Notari does it show or suggest that alumina would be stable under the conditions set forth in the

subject invention, that is in the presence of very high activity, actinides or TR used or that they would retain their ability to absorb oils or hydrocarbons. Certainly, there is nothing in Notari that would suggest that alumina would be useful in treating radioactive contaminants of the type which is the subject matter of this application. There is nothing in the prior Wagh '815 patent that teaches anything of the sort and certainly nothing in the non-analogous Kreuzmann '861 patent relating to this subject matter.

In addition, the Examiner's definition of field of endeavor or analogous art is so broad as to be useless. The Examiner might as well have stated they are in the same field of endeavor because they relate to the same elements. None of the patents relied on by the Examiner are in and of themselves in the same field of endeavor. Only the Wagh '815 patent is in the same general field of endeavor as the invention and even that is different because the prior Wagh patent deals with low level radioactive waste and does not mention or consider the presence of radioactive hydrocarbon materials. The Kreuzmann and Notari patents relied on by the Examiner are simply not relevant at all.

Claim 11 was rejected under 35 U.S.C. 103(a) as being unpatentable over the Wagh '815 patent in view of the Kreuzmann '861 patent and Notari '888 patent and further in view of the Goodson publication no. US 2002/0009622.

The Examiner's incorporation of the Goodson publication is much the same as it is for the prior art. Goodson, according to the Examiner, is in the same field of endeavor because it relates to phosphate cements. That is simply not the case. The present application relates to the stabilization or rendering highly radioactive materials into forms

Kreuzmann patent which relates to the production of highly pure uranium or the Notari patent which relates to the production of spheroidal alumina are in the same field of endeavor as the subject application.

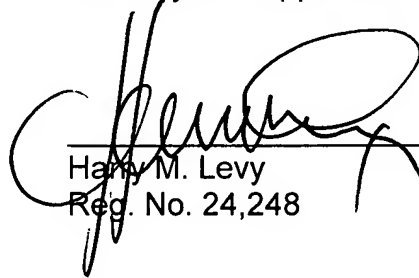
The Examiner has taken the subject invention and used it as a teaching mechanism for assembling prior art in a manner nowhere shown or suggested anywhere and this, as the Examiner well knows, is not permitted.

Accordingly, it is respectfully submitted that each of claims 1-27 as now presented is drawn to patentable subject matter and the allowance thereof is requested.

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Respectfully submitted,

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